

Submerged Arc Welding Flux



GJ-EB3R

Copper-Coated Solid Wire

(2.25Cr-1Mo heat-resistant steel)

- ▶ AWS A5.23 EB3R
- ▶ EN ISO 14171-A-CrMo2

Product description

GJ-EB3R is a 2.25% chromium - 1% molybdenum alloyed solid wire strictly complying with AWS A5.23 EB3R. Designed for elevated temperature service up to 600°C, it provides excellent creep resistance and is ideal for welding boiler tubes, pressure vessels, and piping in power generation and petrochemical industries.

Key Advantages

- ▶ High-Temperature Creep Resistance: 2.25Cr-1Mo composition delivers excellent long-term creep strength at elevated temperatures.
- ▶ Ultra-Low Impurities: Controlled P and S levels ($\leq 0.010\%$) ensure superior toughness and resistance to reheat cracking.
- ▶ PWHT Stable: Maintains consistent mechanical properties after standard post-weld heat treatment at 690°C.

Application Guide

- ▶ With GJ-101G (Basic Flux): For welding 2.25Cr-1Mo steel boiler tubes, headers, and pressure vessels in power plants.
- ▶ With GJ-301 (Neutral Flux): For fabrication of heat exchangers, reactors, and piping in refinery and petrochemical service.
- ▶ For elevated temperature service: Suitable for components operating continuously up to 600°C in fossil fuel and nuclear applications.

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● Main constituents

Elements	C (Carbon)	Mn (Manganese)	Si (Silicon)	Cr (Chromium)	Mo (Molybdenum)	S (Sulfur)	P (Phosphorus)	Cu (Copper)
AWS Requirement	0.05 - 0.15	0.40 - 0.80	0.05 - 0.30	2.25 - 3.00	0.90 - 1.10	≤0.010	≤0.010	≤0.15
Typical Actual Value	0.10	0.60	0.20	2.50	1.00	0.006	0.008	0.08

● Typical Mechanical Properties of Deposited Metal

The mechanical properties of EB3R must be evaluated in combination with a specific flux after PWHT (690°C x 1h). The following data is based on testing combined with a basic agglomerated flux (e.g., SJ101).

Test Item	Yield Strength	Tensile Strength	Elongation	Impact Value@ Room Temp
AWS F8P4 Requirement	≥400 MPa	550 - 700 MPa	≥20%	≥27 J
Typical Actual Result	500 MPa	620 MPa	24%	80 J

● Reference Welding Parameters

Wire Diameter	1.6 mm (1/16")	2.5 mm (3/32")	3.2 mm (1/8")	4.0 mm (5/32")	5.0 mm (3/16")
Amperage	250 - 420	350 - 500	400 - 550	470 - 600	550 - 650
Voltage	26 - 30	27 - 30	28 - 31	28 - 32	30 - 34